

CLAIMS

What Is Claimed Is:

1. A method of inserting empty memory cells into a data flow of network connections of a computer network, the method comprising:
  - 5 receiving an insertion request for an empty memory cell to be inserted into the data flow;
  - receiving a base connection identification (CID) associated with the insertion request;
  - 10 determining an appropriate insertion scheme for carrying out the insertion request; and
  - based on the appropriate insertion scheme, sending the insertion request to an insertion device configured to insert the empty memory cell into a main buffer
  - 15 for the data flow.
2. The method of Claim 1, wherein the appropriate insertion scheme is a predetermined insertion scheme configured to send the insertion request using the base connection identification (CID), wherein the base connection identification is associated with predetermined shaping parameters.
- 20 3. The method of Claim 2, wherein the method further comprises shaping the empty memory cell according to the predetermined shaping parameters.
- 25 4. The method of Claim 1, wherein the appropriate insertion scheme is a predetermined insertion scheme configured to send the insertion request using dedicated unshaped connection identifications.

5. The method of Claim 4, wherein there are 16 unshaped connection identifications.
6. The method of Claim 4, the method further comprising:
  - 5 for the computer network to obtain configured connection identifications;
  - configuring the base connection identification for the configured connection identifications;
  - configuring a cell type indication to be used for the 10 insertion request; and
  - configuring a queue identification to be used for the insertion request.
7. The method of Claim 1, wherein the insertion request is received from one of:
  - 15 an operations and maintenance (OAM) device;
  - a performance monitoring device;
  - an available bit rate (ABR) device;
  - a central processing unit; or
  - an operations and maintenance scan device.
- 20 8. The method of Claim 7, wherein the performance monitoring device and the operations and maintenance scan device each requires an insertion request to be carried out with a predetermined insertion scheme, wherein the predetermined insertion scheme is configured to send the insertion request using the base connection identification (CID), wherein the base connection identification is associated with predetermined shaping parameters.
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9. The method of Claim 1, wherein the an available bit rate (ABR) device requires an insertion request to be carried out with a predetermined insertion scheme, wherein the predetermined insertion scheme is configured to send the insertion request using dedicated unshaped connection identifications.
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10. The method of Claim 1, wherein the step of determining an appropriate insertion scheme comprises performing a lookup in a scan table.
- 10 11. The method of Claim 1, wherein the step of sending the insertion request causes the empty memory cell to be transmitted through the data flow.
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12. The method of Claim 6, wherein the empty memory cell inserted by the insertion device carries the cell type indication.
12. An integrated circuit configured to insert empty memory cells into a data flow of network connections of a computer network, the integrated circuit comprising:  
controller circuitry configured to control operations of:  
receiving an insertion request for an empty memory cell to be inserted into the data flow;  
receiving a base connection identification (CID) associated with the insertion request;  
determining an appropriate insertion scheme for carrying out the insertion request; and  
20 based on the appropriate insertion scheme, sending the insertion request to an insertion device configured to insert the empty memory cell into a main buffer for the data flow.
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14. The integrated circuit of Claim 13, wherein the appropriate insertion scheme is a predetermined insertion scheme configured to send the insertion request using the base connection identification (CID), wherein the base connection identification is associated with predetermined shaping parameters.
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15. The integrated circuit of Claim 14, wherein the controller circuitry is further configured to control shaping the empty memory cell according to the predetermined shaping parameters.
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16. The integrated circuit of Claim 13, wherein the appropriate insertion scheme is a predetermined insertion scheme configured to send the insertion request using dedicated unshaped connection identifications.
- 15 17. The integrated circuit of Claim 16, wherein there are 16 unshaped connection identifications.
18. The integrated circuit of Claim 16, wherein the controller circuitry is further configured to control operations of:
- 20 configuring the dedicated unshaped connection identifications for the computer network to obtain configured connection identifications;
- configuring the base connection identification for the configured connection identifications;
- 25 configuring a cell type indication to be used for the insertion request; and
- configuring a queue identification to be used for the insertion request.

19. The integrated circuit of Claim 13, wherein the insertion request is received from one of:
  - an operations and maintenance (OAM) device;
  - a performance monitoring device;
  - an available bit rate (ABR) device;
  - a central processing unit; or
  - an operations and maintenance scan device.
20. The integrated circuit of Claim 19, wherein the performance monitoring device and the operations and maintenance scan device each requires an insertion request to be carried out with a predetermined insertion scheme, wherein the predetermined insertion scheme is configured to send the insertion request using the base connection identification (CID), wherein the base connection identification is associated with predetermined shaping parameters.
21. The integrated circuit of Claim 13, wherein the an available bit rate (ABR) device requires an insertion request to be carried out with a predetermined insertion scheme, wherein the predetermined insertion scheme is configured to send the insertion request using dedicated unshaped connection identifications.
22. The integrated circuit of Claim 13, wherein with the step of determining an appropriate insertion scheme, the controller circuitry is further configured to control performing a lookup in a scan table.
23. The integrated circuit of Claim 13, wherein the step of sending the insertion request causes the empty memory cell to be transmitted through the data flow.

24. The integrated circuit of Claim 18, wherein the empty memory cell inserted by the insertion device carries the cell type indication.
25. A computer-readable medium carrying one or more sequences of one or more instructions for inserting empty memory cells into a data flow of network connections of a computer network, the one or more sequences of one or more instructions including instructions which, when executed by one or more processors, cause the one or more processors to perform steps of:
  - receiving an insertion request for an empty memory cell to be inserted into the data flow;
  - receiving a base connection identification (CID) associated with the insertion request;
  - determining an appropriate insertion scheme for carrying out the insertion request; and
  - based on the appropriate insertion scheme, sending the insertion request to an insertion device configured to insert the empty memory cell into a main buffer for the data flow.
26. The computer-readable medium of Claim 25, wherein the appropriate insertion scheme is a predetermined insertion scheme configured to send the insertion request using the base connection identification (CID), wherein the base connection identification is associated with predetermined shaping parameters.
27. The computer-readable medium of Claim 26, wherein the instructions further cause the processor to perform a step of shaping the empty memory cell according to the predetermined shaping parameters.

28. The computer readable-medium of Claim 25, wherein the appropriate insertion scheme is a predetermined insertion scheme configured to send the insertion request using dedicated unshaped connection identifications.
- 5 29. The computer-readable medium of Claim 28, wherein there are 16 unshaped connection identifications.
30. The computer-readable medium of Claim 28, wherein the instructions further cause the processor to perform steps of
  - 10 configuring the dedicated unshaped connection identifications for the computer network to obtain configured connection identifications;
  - configuring the base connection identification for the configured connection identifications;
  - 15 configuring a cell type indication to be used for the insertion request; and
  - configuring a queue identification to be used for the insertion request.
31. The computer-readable medium of Claim 25, wherein the insertion request is received from one of:
  - 20 an operations and maintenance (OAM) device; a performance monitoring device;
  - an available bit rate (ABR) device; a central processing unit;
  - or
- 25 an operations and maintenance scan device.
32. The computer-readable medium of Claim 31, wherein the performance monitoring device and the operations and maintenance scan device each requires an insertion request to be carried out with a predetermined insertion

scheme, wherein the predetermined insertion scheme is configured to send the insertion request using the base connection identification (CID), wherein the base connection identification is associated with predetermined shaping parameters.

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33. The computer-readable medium of Claim 25, wherein the available bit rate (ABR) device requires an insertion request to be carried out with a predetermined insertion scheme, wherein the predetermined insertion scheme is configured to send the insertion request using dedicated unshaped connection identifications.
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34. The computer-readable medium of Claim 25, wherein the step of determining an appropriate insertion scheme further causes the processor to perform a lookup in a scan table.
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35. The computer-readable medium of Claim 25, wherein the step of sending the insertion request causes the processor to perform a step of transmitting the empty memory cell through the data flow.
- 20 36. The computer-readable medium of Claim 30, wherein the empty memory cell inserted by the insertion device carries the cell type indication.